



# **TRW Microdynamics Lab Development and Testing Plans**

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Microdynamics Workshop  
JPL 6/24/99

## Part I: SIM Contract Microdynamics Budget

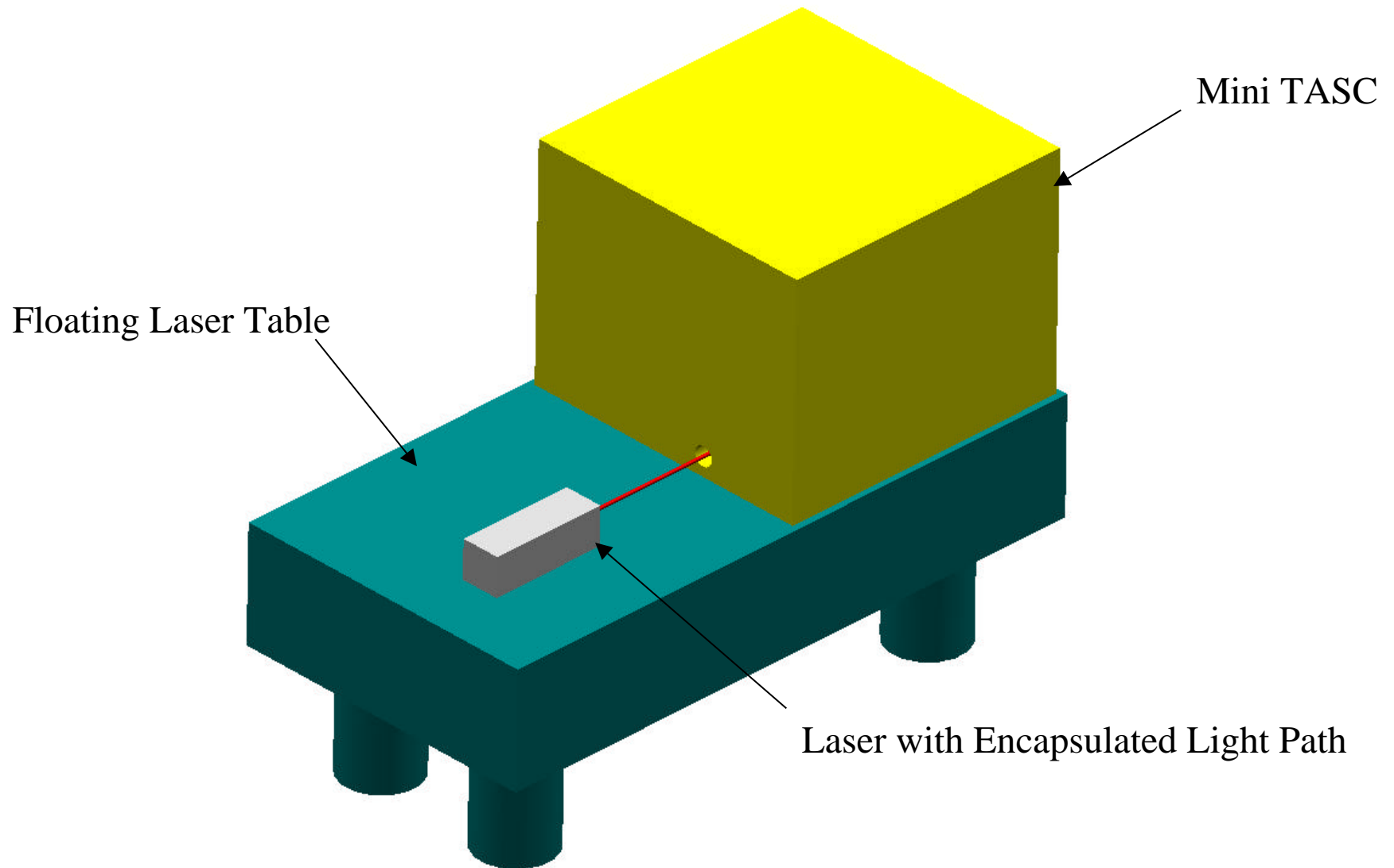
- Join  $\mu$ D team to bring contractors and scientists together
- Work closely with CU and JPL for technology transfer (*learn* to test  $\mu$ D)
- Test SIM-candidate latch at CU for microdynamics

## Part II: TRW IR&D

- Set-up a dedicated microdynamics facility for component testing
- Use ‘traditional’ TRW mechanisms as initial test articles to gain a basic understanding of submicron mechanism behavior
- From knowledge and experience gained in characterizing these mechanisms, attempt to improve their stability by incorporating some lessons learned from  $\mu$ D community
- Test new designs under identical conditions for apples to apples comparisons
- Ultimately, apply microdynamic knowledge and testing experience to support flight systems

# Sketch of TRW Microdynamics Testing Chamber

TRW

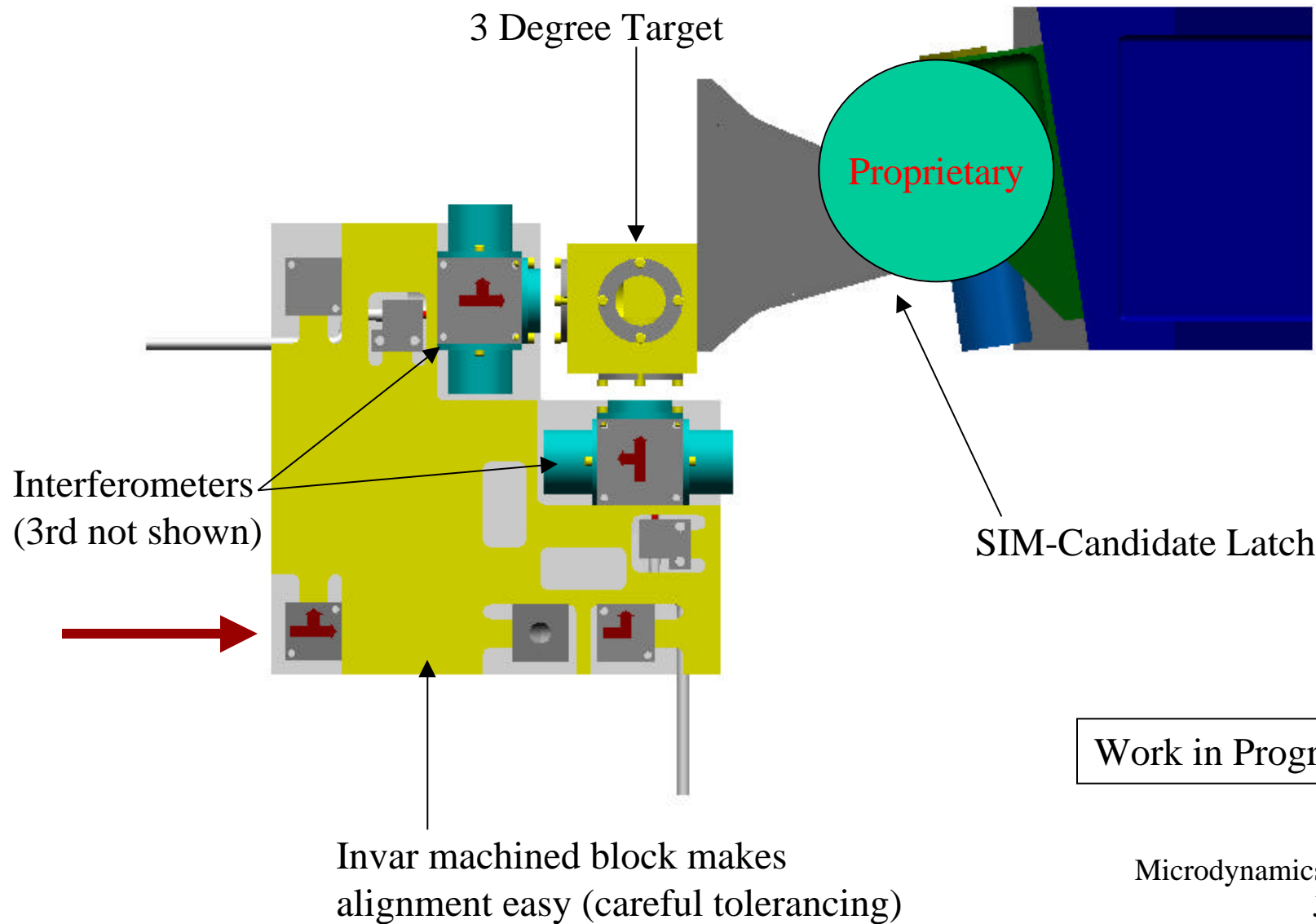


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# Interferometry Setup

TRW

- Hysteresis and Thermal Snap Measurement



# SIM-Candidate Latch Simulator Design

TRW

## Latch Measured Stiffness

$K_y = 3.40 \text{ E4 lb/in}$

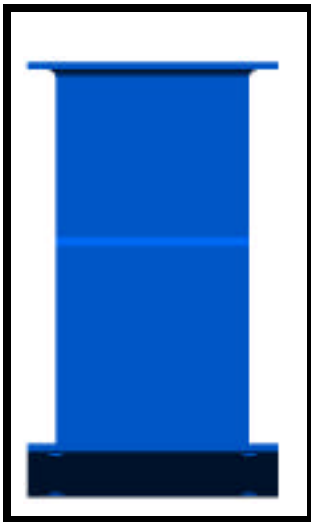
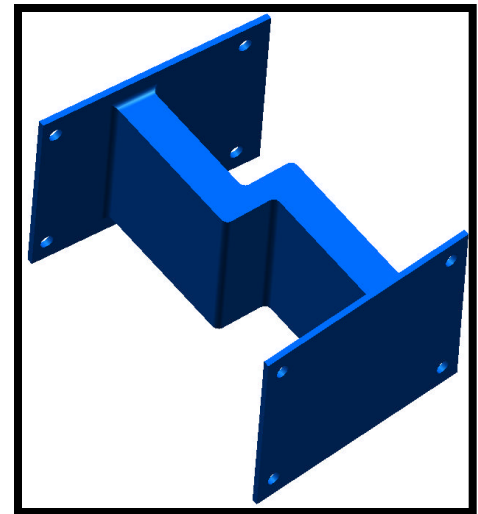
$K_x = 1.55 \text{ E5 lb/in}$

## Simulator Predicted Stiffness

$K_y = 3.35 \text{ E4 lb/in}$

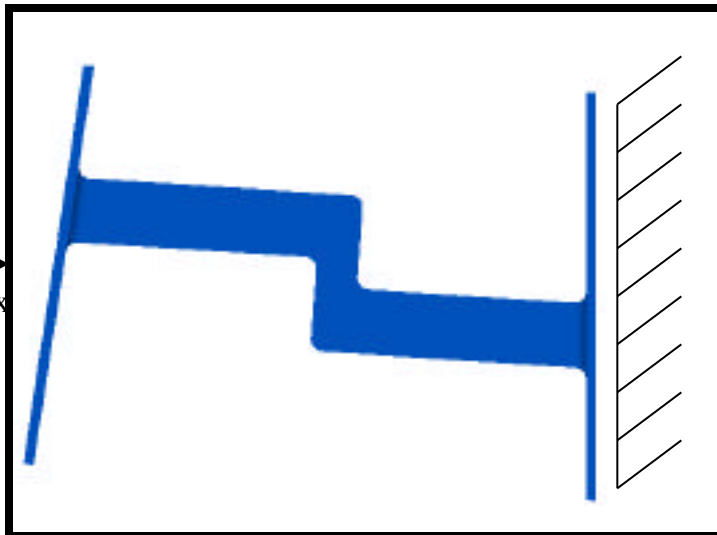
$K_x = 1.06 \text{ E5 lb/in}$

Matched stiffnesses in measurement directions and identical materials and interfaces help characterize the test set-up.



y

x



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## **TRW Microdynamics Initial Instrumentation**

- 5 Channel ZYGO interferometry with wavelength compensation
- Several temperature sensors (type TBD)
- Voice-coil actuators
- Load cells
- PC Labview interface